Cal/Ecotox
Exposure Factors for Mourning Dove (Zenaida macroura)*

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Age at Fledging, Metamorphosis, Weaning	12-13			d	B	Fledgling	Butte; CA	a	1
Age at Fledging, Metamorphosis, Weaning			11-13	d	NR	Fledgling	AL	b	2
Age at Fledging, Metamorphosis, Weaning	review				NR	NR	CANADA; MEXICO; USA	c	3
Age at Sexual Maturity	year of hatching				B	Juvenile	AZ	d	4
Age at Sexual Maturity	93			d	F	Juvenile	VA	e	5
Age at Sexual Maturity	93			d	F	Yearling	AL	f	6
Age at Sexual Maturity	80			d	M	Yearling	AL	g	6
Body Weight - Mean	125			g	B	Adult	Butte; CA	h	1
Body Weight - Mean	112.7	158.8 SD		g	F	Adult	NM	i	7
Body Weight - Mean	99.3	155.1 SD		g	F	Adult	NM	j	7
Body Weight - Mean	114.6	75.7 SD		g	M	Adult	NM	k	7
Body Weight - Mean	111.4	70.7 SD		g	M	Adult	NM	l	7
Body Weight - Mean	129.6	6.9 SD		g	F	Both Adult and Juv.	Lab	m	8
Body Weight - Mean	140.4	10.5 SD		g	M	Both Adult and Juv.	Lab	n	8
Body Weight - Mean	79.0			g	NR	Fledgling	WA	o	9
Body Weight - Mean	7.04			g	B	Hatchling	NE	p	10
Body Weight - Mean	7.7			g	NR	Hatchling	WA	q	9
Body Weight - Mean	114.3	3.3 SE		g	F	Juvenile	VA	r	5
Body Weight - Mean	108	14.7	91-144	g	NR	NR	Lab	s	11
Clutch or Litter Size	1.8				F	Adult	MN	t	12
Clutch or Litter Size	2				F	Adult	ND	u	13
Clutch or Litter Size	1.8				F	Adult	WA	v	14
Clutch or Litter Size	2			eggs/clutch	F	Adult	AL	w	2
Clutch or Litter Size	review				NR	NR	CANADA; MEXICO; USA	x	3
Clutches or Litters per year	5.85-5.98			nests/year	B	Adult	IA	y	15
Clutches or Litters per year	4.4		3-6	nests/yr	B	Adult	TX	z	16
Clutches or Litters per year	review				NR	NR	CANADA; MEXICO; USA	aa	3
Dietary Composition	waste rice, milo, watergrass, yellow star thistle, Turkey mullein seeds, waste wheat, canary grass, safflower, johnson grass				NR	Adult	Butte; CA	ab	1
Dietary Composition	green foxtail (39.8%), yellow foxtail (21.4%), wheat (19.6%), black bindweed (5.1%), maize (4.7%), proso millet (3.0%), flax (2.0%), field mustard (1.6%), lamb's quarters (1.2%)			%	NR	Adult	Lab	ac	17
Dietary Composition	barley, milo, canary grass, flax, lambs quarter, water grass, wheat, cup grass, watermelon, sunflower				B	Both Adult and Juv.	Imperial; CA	ad	18
Dietary Composition	turkey mullein, buckthorn weed, wheat, California poppy, barley, red maids, Napa thistle, miner's lettuce, prostrate pigweed				B	Both Adult and Juv.	San Luis Obispo; CA	ae	18
Dietary Composition	turkey mullein, buckthorn weed, milk thistle, safflower, red maids, California poppy, chickweed, miner's lettuce				B	Both Adult and Juv.	Butte; CA	af	18

Exposure Factors for Mourning Dove (Zenaida macroura)*

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Dietary Composition	safflower, milo, turkey mullein, buckthorn weed, California poppy, rice, sunflower, wheat, corn				B	Both Adult and Juv.	Kern; CA	ag	18
Dietary Composition	review				NR	NR	CANADA; MEXICO; USA	ah	3
Dietary Composition	seeds (96.1%), green vegetation (1.1%), insects (2.8%)			%	NR	NR	NM	ai	19
Dietary Composition	seeds (99.9%), green vegetation (0.1%)			%	NR	NR	NM	aj	19
Dietary Composition	haygrazer (15-96%), wheat (trace-31%), pricklepoppy (trace-19%), panic grass (trace-33%), maize (3-76%), pigweed (trace-14%), sunflower (trace-10%), spurge (trace-17%), wild bean (trace-44%), others (1-6%)			%	NR	NR	OK	ak	20
Dietary Composition	halogeton (22.0% +/- 33.9), pigweed (3.9% +/- 13.5), common vetch (4.1% +/-17.9), Indian ricegrass (26.1% +/- 37.6), collomia(6.7% +/- 21.6), barnyard grass (0.3% +/- 5.0), gromwell (0.4% +/- 3.7), wheat (13.2% +/- 29.9), oats (0.6% +/- 4.2), cottonwood (1.6% +/- 11.6), other species (1.7% +/- 7.9), grit (13.9% +/- 23.9)			%	NR	NR	ID	al	21
Duration of Incubation or Gestation	14-15			d	B	Embryo	Butte; CA	am	1
Duration of Incubation or Gestation	14 d, 16 hr to 15 d				NR	Embryo	Lab	an	22
Duration of Incubation or Gestation	14			d	NR	Embryo	AL	ao	2
Duration of Incubation or Gestation	review				NR	NR	CANADA; MEXICO; USA	ap	3
Fledging or Weaning Rate			1.7-2.0		B	Adult	ID	aq	23
Fledging or Weaning Rate	75%				B	Adult	ID	ar	23
Fledging or Weaning Rate	6.0-6.2				B	Adult	Butte; CA	as	1
Fledging or Weaning Rate	64.5			%	B	Adult	Butte; CA	at	1
Fledging or Weaning Rate	90.3%				B	Adult	WA	au	14
Fledging or Weaning Rate	2.1			young/pair	B	Adult	GA	av	24
Fledging or Weaning Rate	48%				B	Adult	GA	aw	24
Fledging or Weaning Rate	21%			%	B	Adult	PUERTO RICO	ax	25
Fledging or Weaning Rate	37.3			%	B	Adult	MO	ay	26
Fledging or Weaning Rate	1.62				B	Fledgling	ID	az	27
Fledging or Weaning Rate	1.8				B	Fledgling	MN	ba	12
Fledging or Weaning Rate	49.4%				B	Fledgling	MN	bb	12
Fledging or Weaning Rate	0.8		0-1.3		B	Fledgling	WA	bc	14
Fledging or Weaning Rate			1.09-1.21	fledglings/nest	B	Fledgling	MN	bd	28
Fledging or Weaning Rate	6.7			fledglings/female	B	Fledgling	TX	be	16
Fledging or Weaning Rate	1.87			fledglings/nest	NR	Fledgling	Kern; CA	bf	29

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Fledging or Weaning Rate	1.8			fledglings/nest	NR	Fledgling	IA	bg	15
Fledging or Weaning Rate	review				NR	NR	CANADA; MEXICO; USA	bh	3
Food Ingestion Rate	71	66.6-75.4 95% CI		kcal/day/bird	NR	Adult	Lab	bi	17
Food Ingestion Rate	16.1%		7.8-24.1	%	NR	NR	Lab	bj	30
Foraging Distance	review				NR	NR	CANADA; MEXICO; USA	bk	3
Foraging Distance			3-12	km	NR	NR	OK	bl	20
Growth Rate	see figures				B	Nestling	NE	bm	10
Growth Rate	see figures				B	Nestling	ND	bn	13
Growth Rate	review				NR	NR	CANADA; MEXICO; USA	bo	3
Hatching Success	55.2%			%	B	Adult	Kern; CA	bp	29
Hatching Success	67.1%			%	NR	Hatchling	Kern; CA	bq	29
Hatching Success	226 (both eggs); 56 (one egg)				NR	Hatchling	AL	br	2
Longevity	1.53	0.19 SE		yr	B	Adult	Contra Costa; CA	bs	31
Longevity	review				NR	NR	CANADA; MEXICO; USA	bt	3
Metabolic Rate	1.14	0.46 SD		ml O2/g bw/hr	F	Both Adult and Juv.	Lab	bu	8
Metabolic Rate	1.11	0.29 SD		ml O2/g bw/hr	M	Both Adult and Juv.	Lab	bv	8
Population Density	0 to 5 (+/-8)			nests/100 ha	B	Adult	IA	bw	32
Population Density	0.02			nests/ha	B	Adult	ID	bx	23
Population Density	208				B	Adult	ID	by	27
Population Density	1.8				B	Adult	WA	bz	14
Population Density	3.3		1-9		B	Adult	GA	ca	24
Population Density			1-5 per 2.02 ha		B	Adult	Fresno; Kings; CA	cb	33
Population Density	250-330			pairs/220 acres	B	Adult	IA	cc	15
Population Density			65-100	pairs	B	Adult	MN	cd	28
Population Density	165			nests/81 acres	B	Adult	TX	ce	16
Population Density	9.08 (76)			pairs/square mile	B	Adult	ND	cf	34
Population Density	figures			nests/ha	B	Adult	PUERTO RICO	cg	25
Population Density	21.7			birds/100 mi	NR	NR	Kern; CA	ch	29
Surface Area	241			cm^2	NR	Adult	Lab	ci	35
Surface Area	198			cm^2	NR	Adult	Lab	cj	35
Survival/ Mortality	48.0 %	4.3 SE			B	Adult	Contra Costa; CA	ck	31
Survival/ Mortality	28.2%				B	Adult	MN	cl	36
Survival/ Mortality	0.716	0.651-0.782 95% CI			B	Adult	MO	cm	37
Survival/ Mortality	37.3% (before hatch), 9.2% (after hatch)				B	Embryo; Juvenile	MN	cn	28
Survival/ Mortality	13.7%			%	NR	Hatchling	IA	co	15
Survival/ Mortality	58.5%				B	Juvenile	MN	cp	36
Survival/ Mortality	86%				B	Juvenile	TX	cq	16

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Survival/ Mortality	0.50				B	Nestling	ID	cr	23
Survival/ Mortality	review				NR	NR	CANADA; MEXICO; USA	cs	3
Time of Fledging or Metamorphosis	15			d	B	Fledgling	AL	ct	38
Time of Mating/ Laying	review				NR	NR	CANADA; MEXICO; USA	cu	3
Time of Migration or Dispersal	September				B	Both Adult and Juv.	Butte; CA	cv	1
Time of Migration or Dispersal	winter				B	Both Adult and Juv.	Merced; Stanislaus; CA	cw	39
Time of Migration or Dispersal	summer				B	Both Adult and Juv.	Merced; Stanislaus; CA	cx	39
Time of Migration or Dispersal	review				NR	NR	CANADA; MEXICO; USA	cy	3
Time of Migration or Dispersal	review				NR	NR	CANADA; MEXICO; USA	cz	3
Time of Molt	review				NR	NR	CANADA; MEXICO; USA	da	3
Time of Nesting	April 20-September 20				B	Adult	NE	db	10
Time of Nesting	latter two-thirds of July				B	Adult	ID	dc	27
Time of Nesting	mid-March to September 20				B	Adult	Butte; CA	dd	1
Time of Nesting	Mar-Sep				B	Adult	Kern; CA	de	29
Time of Nesting	April-October				B	Adult	MN	df	28
Time of Nesting	March-September				B	Adult	TX	dg	16
Water Ingestion Rate	6.9	0.9		% body weight/day	NR	NR	Lab	dh	11

Notes

a age at which young leave nest; N=NR; Gray Lodge State Refuge
b N=136 nests; near Auburn
c N=NR
d age of earliest sexual maturity, based on gonad sizes and breeding behaviors; N=75 males, 66 females; near Tuscon
e age at which birds were judged capable of reproduction; N=58 birds; Age=131 days; summer, fall
f age at which birds became capable of breeding; N=91 birds; Jul-Oct, Jun-Sep
g age at which birds became capable of breeding; N=79 birds; Jul-Oct, Jun-Sep
h average body weight; N=NR; Gray Lodge State Refuge
i mean body weight; N=9 birds; winter; southeastern area
j mean body weight; N=6 birds; summer; southeastern area
k mean body weight; N=14 birds; winter; southeastern area
l mean body weight; N=13 birds; summer; southeastern area
m mean body weight; N=14; Condition=fasted; June; captured at Dundee, IL
n mean body weight; N=6; Condition=fasted; June; captured at Dundee, IL
o average body weight; N=15 nests; Age=14 days; near Orondo, Douglas County
p mean body weight; N=28 nestlings; Age=day of hatch; Fremont and Waterloo areas
q average body weight; N=15 nests; Age=0 days (hatch); near Orondo, Douglas County
r mean body weight; N=5 birds; Age=131 days; summer, fall
s average body weight; N=11 birds; Nov-Dec; captured in Santa Monica Mountains
t mean clutch size; N=524 nests; April-September; Prairie Island Nuclear Generating Plant
u clutch size in 97.2% of observed nests; N=1203 nests; April-September; J. Clark Salyer National Wildlife Refuge
v mean number of eggs laid per nesting attempt; N=123 nests; April-August; Rufus Woods Lake area
w average clutch size; N=592 clutches; near Auburn
x N=NR
y average number of nest attempts by individual pairs; N=1108-1443 nests/year; Lewis, Cass County
z mean number of nest attempts made per pair per year; N=7 marked pairs; Texas A&M College campus
aa N=NR

ab	food items in crop contents, in order of importance; N=22 birds; November-December; Gray Lodge State Refuge
ac	percent occurrence in diet by weight; N=120 birds; Aug-Sep; captured in Grand Forks County, ND
ad	principal dietary items in crop contents; N=214 crops; all; Imperial Valley; see paper for seasonal changes in relative amounts of items in diet
ae	principal dietary items in crop contents; N=183 crops; all; inner coast mountains; see paper for seasonal changes in relative amounts of items in diet
af	principal dietary items in crop contents; N=152 crops; all; Sacramento Valley; see paper for seasonal changes in relative amounts of items in diet
ag	principal dietary items in crop contents; N=192 crops; all; southern San Joaquin Valley; see paper for seasonal changes in relative amounts of items in diet
ah	N=NR
ai	percent of diet by volume based on crop analysis; N=38 birds; Jul-Sep; New Mexico State University Ranch; See citation for plant seed species consumed.
aj	percent of diet by volume based on crop analysis; N=42 birds; Oct-Mar; New Mexico State University Ranch; See citation for plant seed species consumed.
ak	percent consumption by weight of 9 most frequently eaten foods (range over 7 months); N=NR; Sep-Mar; Jackson County (elev. 430 m); See citation for montly consumption of food items.
al	percent occurrence by mass in crop contents (mean +/- SD); N=223 birds; Jun-Jul; Idaho National Engineering Laboratory
am	incubation period; N=NR; Gray Lodge State Refuge
an	incubation period up to time of hatching; N=1 egg
ao	N=5 cases; near Auburn
ap	N=NR
aq	mean number of fledglings per successful nest (over three years); N=5-7 nests/yr; June-July; Idaho National Engineering Laboratory
ar	proportion of active nests that fledged young; N=24 nests; June-July; Idaho National Engineering Laboratory
as	mean number of nestlings raised per nesting pair per season (representing multiple broods per season); N=43 pairs; Gray Lodge State Refuge
at	proportion of attempted nests that fledged at least one young; N=220 nests; Gray Lodge State Refuge
au	proportion of young fledged in successful nests; N=123 nests; April-August; Rufus Woods Lake area
av	mean productivity; N=73 nests; January-September; southwest and northeast areas
aw	proportion of nests that were successful; N=73 nests; January-September; southwest and northeast areas
ax	nest success estimate based on Mayfield method; N=27 nests; January-December; near Cidra, Guanica, and Cabo Rojo; Nests were considered successful if at least one nestling reached 12 d of age (fledging age).
ay	percent of all nests in which nestlings reached 10 d of age; N=83 nests; Davisdale Wildlife Area (39deg01.3'N,92deg37.5'W); Success in edge habitats did not differ from that in continuous habitats.
az	number of doves fledged per breeding adult; N=NR; June-August; near American Falls
ba	mean number of young fledged per successful nest; N=358 nests; April-September; Prairie Island Nuclear Generating Plant
bb	proportion of active nests that successfully fledged young; N=524 nests; April-September; Prairie Island Nuclear Generating Plant
bc	mean number of young fledged per nesting attempt; N=123 nests; April-August; Rufus Woods Lake area
bd	number of young fledged per nesting attempt; N=~81 nests/year; Madelia Research Center, Watonwan County; 61.8% to 67.8% of active nests fledged at least one young.
be	mean number of fledglings produced per adult female; N=7 marked pairs; Texas A&M College campus; Author notes that this value is probably unusually high.
bf	average number of fledglings per successful nest; N=185 successful nests; near Bakersfield; See citation for data from Iowa and Nebraska.
bg	average number of fledglings produced per successful nest; N=1108-1443 nests/year; Lewis, Cass County
bh	N=NR
bi	intake based on analysis of crop contents; N=120 birds; Aug-Sep; captured in Grand Forks County, ND; Equivalent to 16.09 +/- 0.49 g/day/bird (based on a seed diet).
bj	daily food ingestion as percent of body weight; N=22 birds; Indirect measurement, via estimation of loss of body weight over 24 hours.
bk	N=NR
bl	distance flown from night roosts to feeding sites; N=NR; Jun-Dec; Jackson County (elev. 430 m)
bm	growth rates of body weight, body length, wing, alar tract from hatching to fledging; N=53 nestlings; Fremont and Waterloo areas
bn	growth rates of nestling weight, body length, wing chord, tail length, 6th primary; N=178 birds; April-September; J. Clark Salyer National Wildlife Refuge
bo	N=NR
bp	percent of nests in which at least one egg hatched; N=335 nest attempts; near Bakersfield; See citation for data from Iowa and Nebraska.
bq	percent of eggs laid that hatched; N=NR; near Bakersfield; See citation for data from Iowa and Nebraska.
br	number of nests in which one or both eggs hatched; N=592 nests; near Auburn
bs	mean life span; N=725 birds; Berkeley
bt	N=NR
bu	mean oxygen consumption during the light period at 10 deg C; N=14; Condition=fasted; June; captured at Dundee, IL
bv	mean oxygen consumption during the light period at 10 deg C; N=6; Condition=fasted; June; captured at Dundee, IL
bw	mean nest densities in untilled corn or soybean fields; N=8-9 fields; spring; Adair County
bx	density of nests; N=15 plots; June-July; Idaho National Engineering Laboratory

by	number of nests found in 13.4 acres of orchards; N=NR; June-August; near American Falls
bz	nesting pairs per 100 trees checked; N=4 orchards; April-August; Rufus Woods Lake area
ca	mean breeding density; N=ten 100 ac plots; January-September; southwest and northeast areas
cb	range of nesting densities on agroforestry plots; N=6 plots; February-June; San Joaquin Valley Agroforestry Demonstration Project
cc	density of breeding pairs; N=220 acres; Lewis, Cass County
cd	range of total annual nesting population, over 3 yrs; N=65-100 pairs; Madelia Research Center, Watonwan County
ce	peak monthly nesting density in study area; N=648 nests; June; Texas A&M College campus
cf	mean density of breeding birds (maximum density in parentheses); N=130 sample units (160 acres/unit); April-July
cg	Figures of yearly and monthly nest density estimates; N=48-158 transects; January-December; near Guanica and Cabo Rojo
ch	average number of birds per 100 miles of survey route; N=1000 mi surveyed/mo; near Bakersfield; See citation for data from Iowa and Nebraska.
ci	measured area of skin beneath feathers of 649.1 g bird, excluding beak and non-feathered portions of legs; N=1
cj	measured area of the external plumage surface of 649.1 g bird, excluding beak and non-feathered portions of legs; N=1
ck	mean annual mortality rate; N=725 birds; Berkeley
cl	weighted mean annual mortality of banded doves; N=991 birds; near Savage
cm	overall survival of radiomarked individuals; N=315; spring, summer (1 yr); Davisdale and Mussel Fork Wildlife Areas; No differences found among areas, years, or sexes.
cn	percent of eggs or young lost before and after hatch; N=634 eggs; Madelia Research Center, Watonwan County
co	percent of young hatched that did not survive to fledging; N=3580 hatchlings; Lewis, Cass County
cp	weighted mean annual mortality of banded doves; N=1,179 birds; near Savage
cq	estimated mortality rate in the first year, based on band returns; N=NR; Texas A&M College campus
cr	survival rate from incubation to fledging (26 days); N=24 nests; June-July; Idaho National Engineering Laboratory
cs	N=NR
ct	age at fledging; N=35 broods; east-central area
cu	N=NR
cv	period of departure for fall migration; N=NR; Gray Lodge State Refuge
cw	time of northward movement; N=NR; winter; Turlock area
cx	time of southward migration; N=NR; summer; Turlock area
cy	time of juvenile dispersal; N=NR
cz	time of fall and spring migration; N=NR
da	N=NR
db	period during which active nests were observed; N=121 nests; Fremont and Waterloo areas
dc	time of peak nesting activity; N=NR; June-August; near American Falls
dd	nesting season duration (peaks in July); N=NR; Gray Lodge State Refuge
de	period from beginning to end of nesting; N=335 nest attempts; near Bakersfield; See citation for data from Iowa and Nebraska.
df	period from onset of egg laying through fledging; N=~81 nests/year; Madelia Research Center, Watonwan County
dg	period of active nesting; N=648 nests; Texas A&M College campus
dh	daily ad libitum water consumption of captive birds as percent of body weight; N=11 birds; Nov-Dec; captured in Santa Monica Mountains; Minimum water requirement for maintenance of body weight was determined to be 2.8 +/- 1.0 % body weight/day.

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